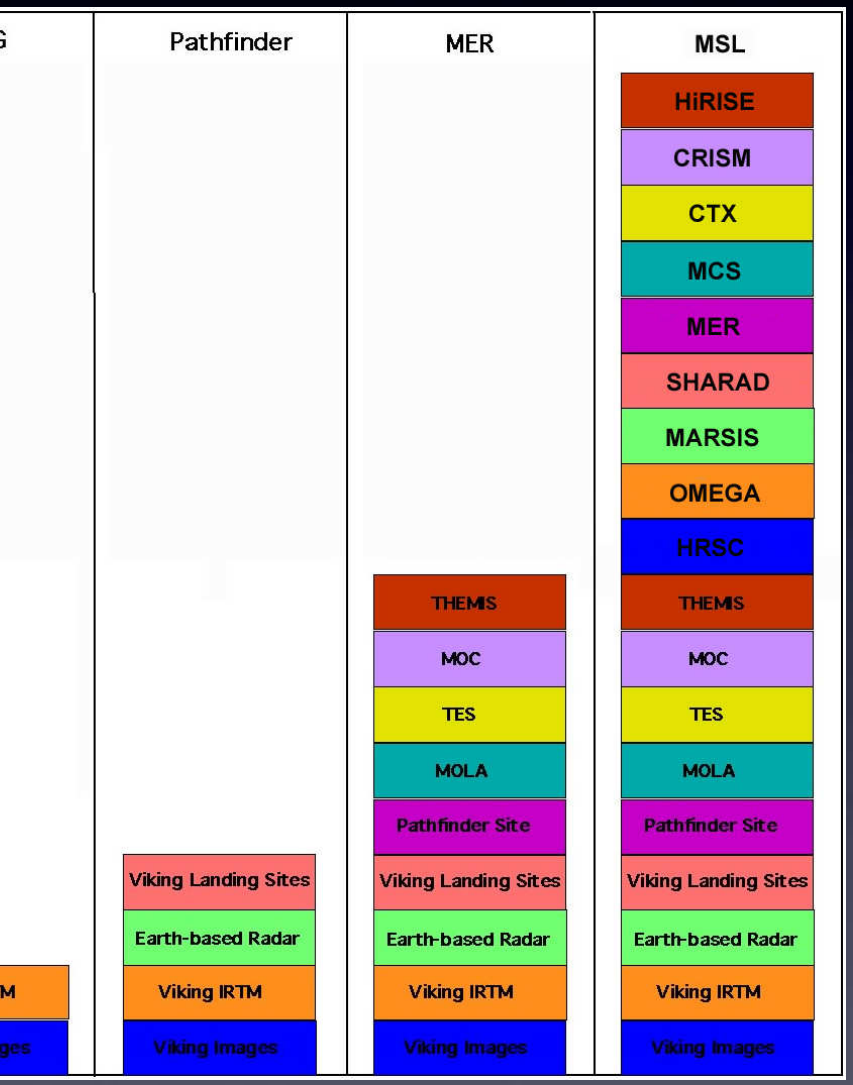
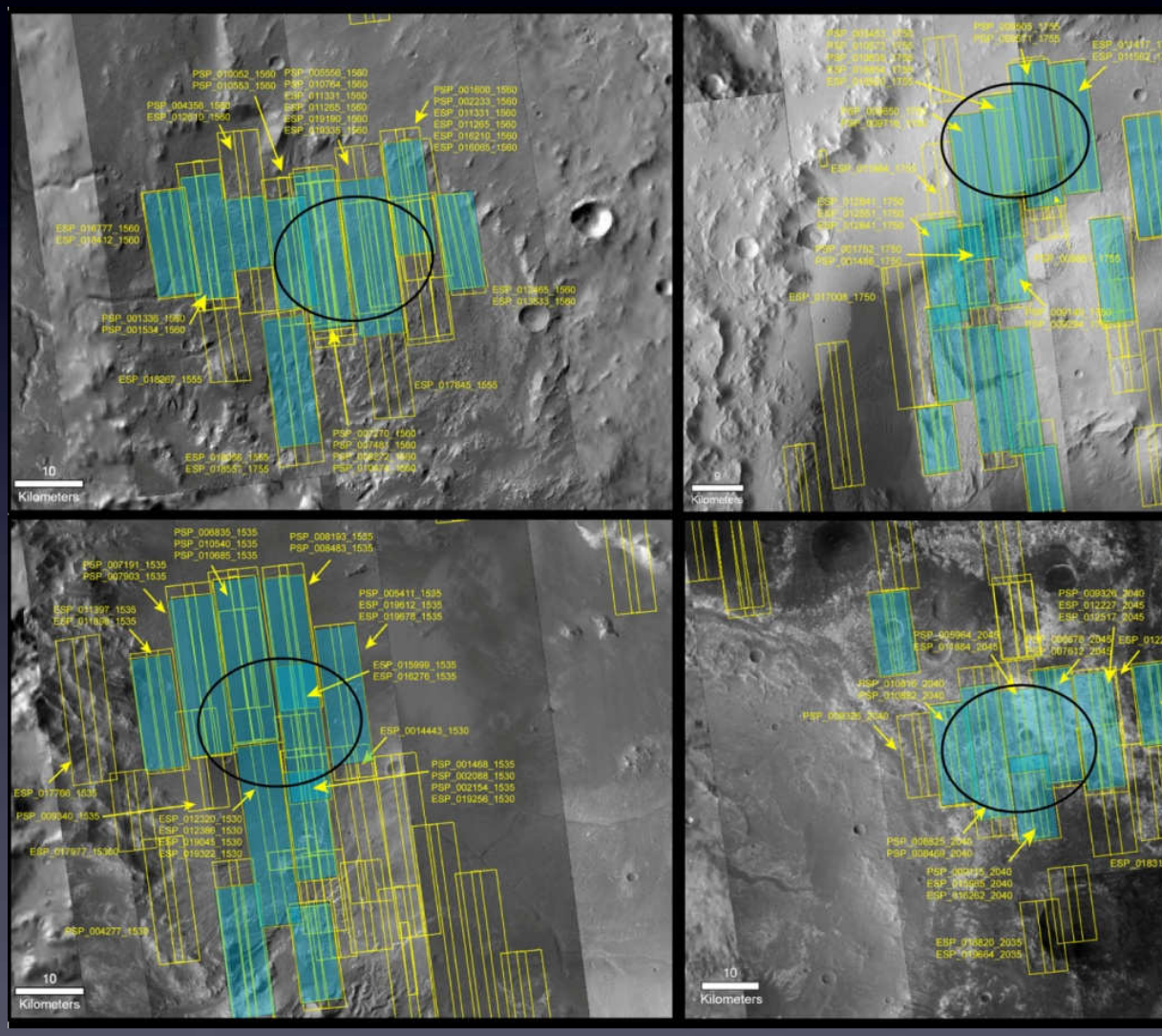
...rrent orbital assets have set the new standard for data required for identifying and qualifyin... new Mars landing sites

An incredible effort by instrument teams has gone into obtaining high quality data used to evaluate candidate sites



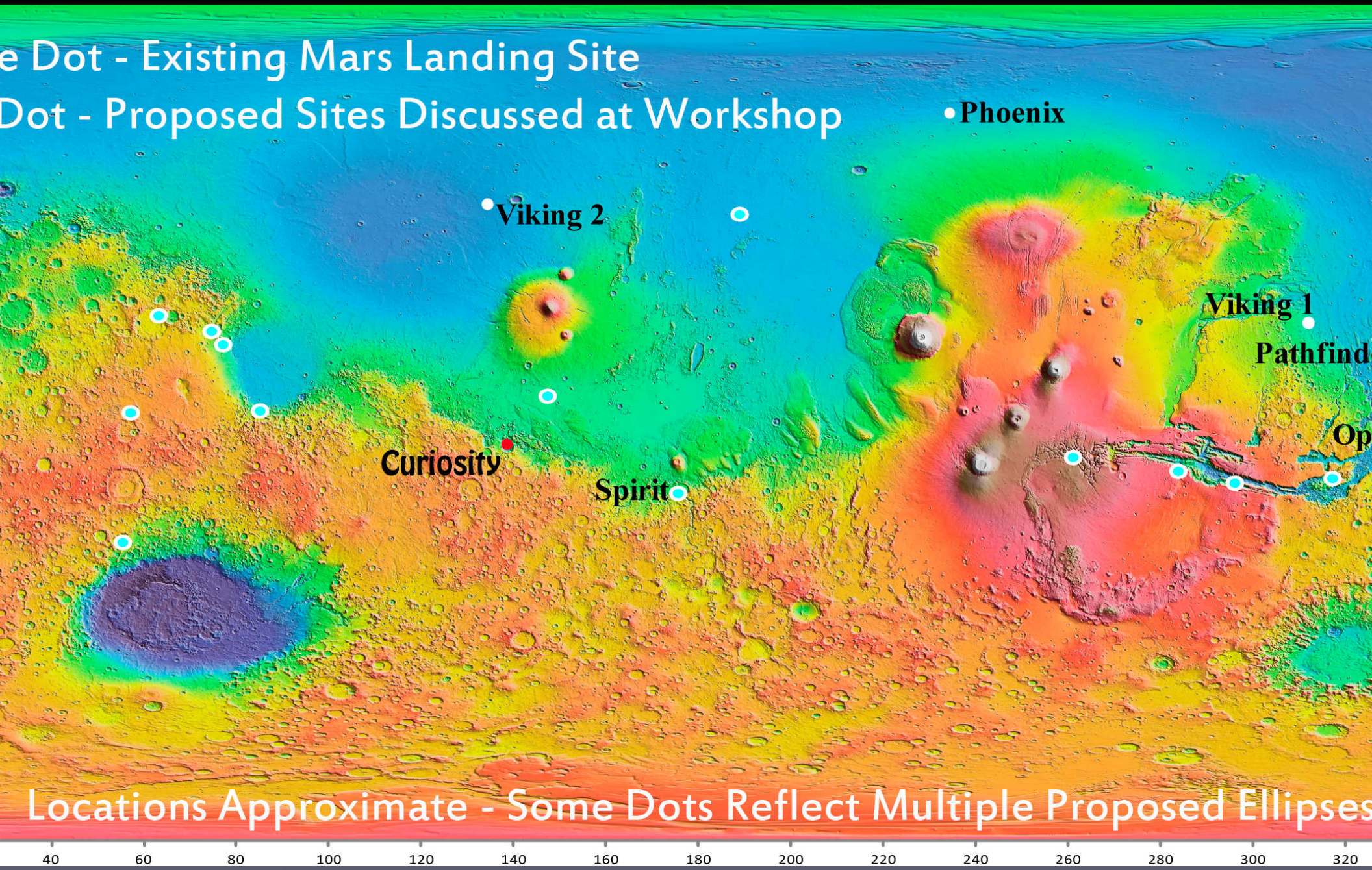


Orbital assets have a finite lifetime and there is no current pla...

Future Landing Sites on Mars:

- Multiple calls for new sites resulted in 40+ candidates
- Includes a wide range of future mission scenarios
  - Many candidate ellipses are 10 km X 15 km, but others specified by proposer
- Mars Steering Committee assembled that represents international interest and broad scientific topics (Astrobiology to Sample Return and others)
- Steering Committee includes John Grant, Matt Golombek, and Nicolas Mangold (co-chairs), Steve Ruff, Dave Des Marais, Scott McLennan, Brad Jolliff, Jack Mustard, Ken Tanaka, Barb Sherwood-Lollar, Gian Ori, Ernst Hauber, John Bridges, Mark Sephton, David Fernandez Remolar, Francois Poulet
- Want to create a data base for evaluating landing sites for future Mars missions.

Past, Present, and Future…



First Landing Site Workshop: Possible Joint Rover 2018 Landing Sites
Wednesday, February 29, 2012:

tarts at 8:30 am

n (1 hour)

yer and Jorge Vago
5 mins)

15 mins)
didate landing site using orbital assets

nd Nicolas Mangold
and Goals of the Workshop (15 mins)

bek
nd-2-End MEPAG SAG Reference Landing Sites (15 mins)

ndidate Landing Sites in the Chasmata (45 minutes, 15 minutes each talk):

r and Laetitia Le Deit
y and possible volcanic materials at a landing site in Xanthe Terra

drelli
s at Firsoff Crater (with notes on Holden Crater)

prarelli
chiaparelli Crater

dimentary Rocks and Rocks at Candidate Landing Sites (45 minutes, 15 minutes each talk):

E. Williams and C. M. Weitz
r Mission to Aqueous Deposits in the Melas Chasma Basin

in
of Martian History and Its Diverse Environments Exposed in Coprates Chasma, Valles

inthus and Ladon Basin

scussion (30 Minutes)

0 to 12:30)

12:30 pm Geochemical Indicators at Candidate Landing Sites (1 hours, 45 minutes, 15 min

Joe Michalski
Should the Deep Crust be our Primary Astrobiological Target for Mars? Observations from L
Crater and Other Sites

Bill Farrand, Jim Rice, and Eldar Noe Dobrea
Exploring the Mawrth Vallis Stratigraphy South of 20N

Joe Michalski
Fe-Mg clays, Al-clays, and sulfates in the northern Mawrth Vallis Region

John Mustard, Bethany Ehlmann, J. R. Skok, Dave Des Marais, Nicolas Mangold, and Francoi
Nili Fossae Trough

Janice L. Bishop, Daniela Tirsch, and Livio Tornabene
Analysis of Phyllosilicate-bearing outcrops and their relationship to olivine-and pyroxene-b
at a proposed landing site at Libya Montes.

John Mustard, Bethany Ehlmann, J. R. Skok, Dave Des Marais, Nicolas Mangold, and Francoi
Northeast Syrtis

Harold Clenet
Carbonate-bearing crustal exposure in an impact crater associated with an outflow channel
of Eos Mensa

2:15 pm Discussion (30 minutes)

2:45 pm Possible Hydrothermal and Ice Indicators at Landing Sites (1 hour, 15 minutes, 15

Eldar Noe Dobrea
Hydrothermal Alteration in the NW Hellas Region

Jim Rice
The Silica-Rich hydrothermal Deposits of the Columbia Hills

Matt Smith
Potential Future Landing Site in Quartz and Hydrated-Silica Bearing Terrain Near Antoniadi

Graziella Caprarelli
A Candidate Landing Site in Cerberus Palus
Jennifer Heldmann, L. R. Schumeier, M. Wilhelm, C. Stoker, C. McKay, A. Davila, M. Marinov
and H. Smith
Characterization of a mid-latitude ice-rich landing site on Mars to enable in situ habitability

4:00 pm Discussion (30 minutes)

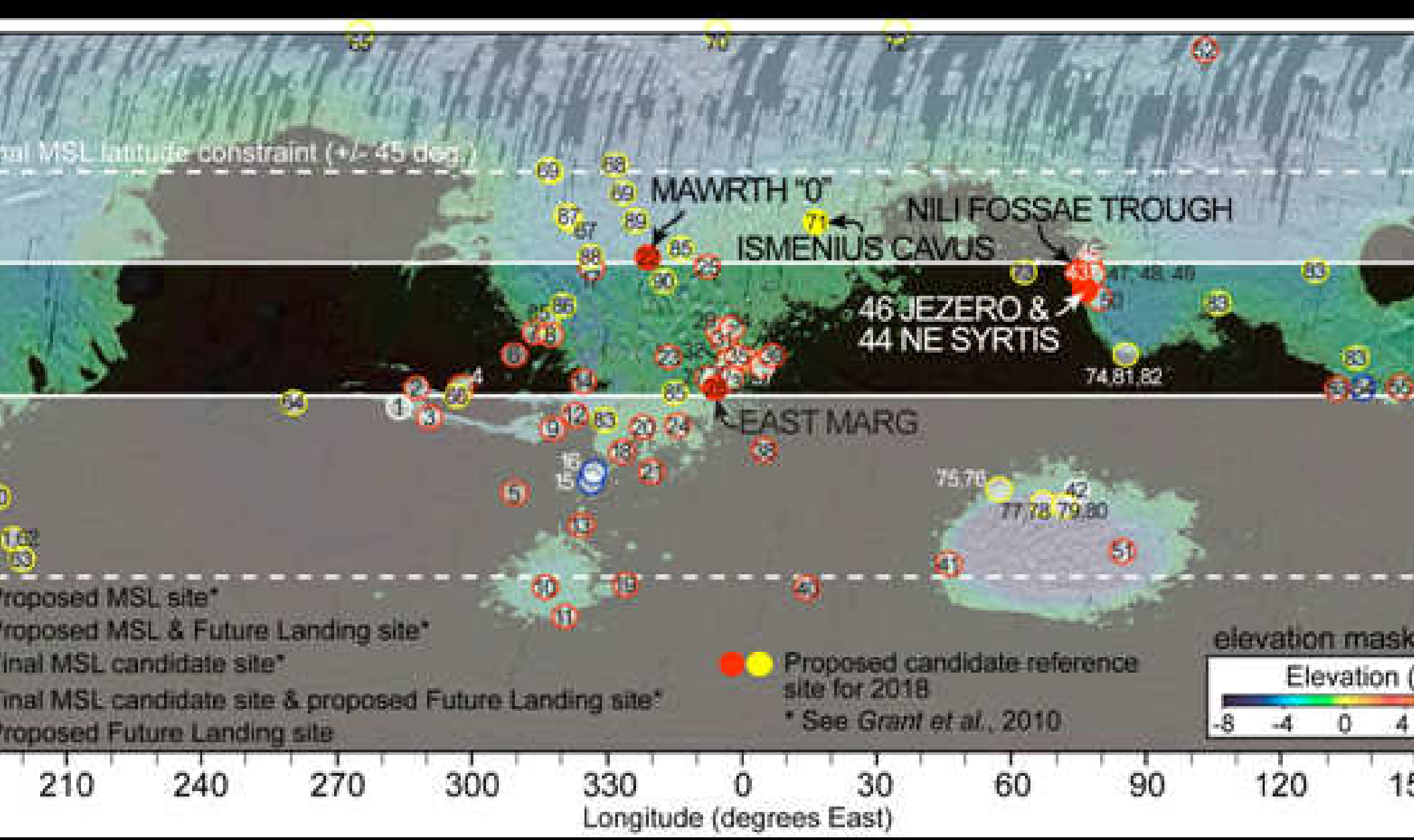
4:30 pm Overall Discussion and Ranking of High vs. Low Priority Sites (30 minutes)

Desired Outcomes:

- Discuss exciting Mars science!
- Triage list of candidate sites
- Initial prioritization for orbital imaging
- All sites will be carried forward

in Priority Order

	Critically assess any evidence for past life or its chemical precurso place detailed constraints on the past habitability and the potentia preservation of the signs of life
	Quantitatively constrain the age, context and processes o accretion, early differentiation and magmatic and magnet history of Mars.
	Reconstruct the history of surface and near-surface processes invo water.
	Constrain the magnitude, nature, timing, and origin of past planet climate change.
	Assess potential environmental hazards to future human explorati
	Assess the history and significance of surface modifying processes including, but not limited to: impact, photochemical, volcanic, and
	Constrain the origin and evolution of the martian atmosphere, acc for its elemental and isotopic composition with all inert species.
	Evaluate potential critical resources for future human explorers.
	Determine if the surface and near-surface materials conta



k shows draft latitude & elevation constraints for the proposed MSR (

ites are community-proposed:

59 sites from MSL landing site process, 26 sites from CDP future landing sites

led sites are 7 E2E-iSAG reference sites that may meet science object

BE POSSIBLE TO MEET ALL 8 PROPOSED MSR SCIENTIFIC OBJECTIVES AT ANY OF THESE

	Lat (°N)	Lon (°E)	Elev. (km)	The Sedimentary/hydrothermal story	The igneous st
fer	-6	354	-1	In the channeled Noachian uplands south of Meridiani Planum is a small, shallow basin with an exposure of possible chlorides stratigraphically overlain by an eroding unit with very strong CRISM and even TES signatures of phyllosilicates.	The rocks appear to be capped unit of Noachian age.
ter	-14	175	-2	The Noachian-aged Columbia Hills contain outcrops of opaline silica likely produced from hot springs or geysers and outcrops rich in Mg-Fe carbonates likely precipitated from carbonate-bearing solutions. Sulfate-rich soils and outcrops also are present.	Extensive unaltered Hesperian basalts embay the Noachian C Also present are several differ rock types with minimal altera
ter	18	78	-3	Delta with incorporated phyllosilicates and carbonates along west margin of crater. The crater formed in Noachian olivine and pyroxene-rich crust.	The crater floor has a more rec Hesperian that looks like fresh flows. Would land on volcanic to delta.
e 0	25	339	-3	Layered Al and Fe/Mg Phyllosilicates in poorly understood setting. Possible mud volcano in the vicinity of ellipse. Land on science for exobiology.	Mafic material present in ellip be partly altered. Unaltered H volcanic at ~30 km.
	16	77	-2	Extensive and diverse mineral assemblages within ellipse in Hesperian Syrtis Major volcanic region. Maybe water-lain deposits or in situ alteration. Likely go to required for all materials of exobiological interest.	Hesperian Syrtis Major volcani
e	21	75	-1	Widespread altered materials, as ejecta at eastern side of ellipse, in place to west of ellipse.	Land on unaltered Hesperian v
				Single site to combine clay-bearing paleolake sediments and current	